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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,062	01/27/2006	Katsuyoshi Nakazato	8062-1030	5765

466 7590 07/25/2007  
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ARLINGTON, VA 22202

EXAMINER
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LEVKOVICH, NATALIA A

ART UNIT	PAPER NUMBER
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1743

MAIL DATE	DELIVERY MODE
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07/25/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.	Applicant(s)	
10/550,062	NAKAZATO, KATSUYOSHI	
Examiner	Art Unit	
Natalia Levkovich	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☐ Claim(s) 19-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/21/2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restriction***

1. Applicant's election without traverse of claims 19-26 in the reply dated 05/31/2007 is acknowledged.

***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the thin film on the quartz thin plate and the surface portion of the inner vessel covered with the membrane must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

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of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 19-26 are rejected under 35 U.S.C. 112, second paragraph, as being unclear for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

*With respect to claim 19*, the structural elements recited by 'means plus function' language, are not clearly disclosed in the specification. For example, the claim recites means for 'controlling a concentration of the protein in the protein solution' and means for 'for controlling a concentration of the precipitating agent in the protein solution'. The only reasonable support for these features found in the specification was a recitation of 'operation of a selector valve'. In this connection, it is unclear whether or not Applicant is trying to claim two selection valves. No structural inter-relationships between the two above cited means and other elements are set forth in the disclosure. It is also unclear

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how a general recitation of a pump in the specification can read on the 'means for measuring the concentration of the precipitation agent' recited in the claim.

*Regarding claim 20*, it is unclear whether or not the 'outer vessel' is the same as the container of claim 19. IN line 4, the 'front side surface and the back side surface', is unclear and lacks antecedent basis.

*In claim 22*, the 'light that transmits a portion of the quartz thin plate', is unclear. In lines 3-4, the 'quartz thin plate' and 'thin film' lack antecedent basis.

*In reference to claim 23*, no clear description of the 'means for sending the precipitating agent solution ... to the outer vessel' was found in the specification. Is it the same pump disclosed as 'means for measuring the concentration of the precipitation agent'? Additionally, the 'outer vessel', lacks antecedent basis.

*In claim 24, line 3*, the 'inner vessel' lacks antecedent basis.

*Regarding claim 25*, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 19 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi et al. (US 5362325) in view of Harvey (US 4717827).

Shiraishi et al. disclose an apparatus for growing crystals comprising, as shown in Figure 12, dialysis chamber 4 ['container' – Ex.] which includes dialysis membrane 11, inner dialysis chamber 4a, outer chamber 4b, syringes 1a ['means for measuring the concentration of the precipitating agent' and 'means for sending precipitating agent solution' – Ex.], tubes 51, 52 ['means for introducing protein solution', see Figure 10], valve mechanism 29 ['means for controlling the concentration of protein solution' – Ex.] and CCD camera 41 (Figure 7).

Although Shiraishi discloses optical methods of observation and controlling the process of protein crystal growth and is concerned about solution concentrations, the reference does not teach the use of interferometer and photometer. However, these devices are common for macro-molecule determination. For example, Harvey discloses an apparatus for macro-molecule sample analysis including spectrophotometer 50 with a Michelson interferometer (see Figure 4). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have employed the spectrophotometer of Harvey with the modified apparatus of Shiraishi, in order to

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provide proven means for precise determination of macro-molecule structures, including protein crystals.

8. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraishi et al. in view of Harvey , and further in view of Wagner et al. (US 20020115225).

Shiraishi does not teach quartz plate with reflective film. However, coated quartz substrates are well known in the art. For example, Wagner discloses in [0042], [0056] metal coated quartz substrates used for bio-molecular screening. It would have been within the ordinary skill of an artisan to have employed such substrates in the modified apparatus of Shiraishi because quartz has excellent optical characteristics (such as UV transparency), and thin film coatings (including metal coatings) allow to enhance chemical and optical characteristics of the substrate surfaces.


### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Natalia Levkovich whose telephone number is 571-272-2462. The examiner can normally be reached on Mon-Fri, 8 a.m.-4p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jill Warden  
Supervisory Patent Examiner  
Technology Center 1700